

PATENT APPLICATION TRANSMITTAL LETTER

TO THE COMMISSIONER OF PATENTS AND TRADEMARKS

Docket No. 6371-1

Transmitted herewith for filing of the patent application of

Martin J. MONTGOMERYVENTILATING FOUNDATION FLOOD GATE

Enclosed are:

- ☒ Application
☒ Declaration (Unsigned)
☐ Verified Statement (Declaration) Claiming Small Entity Status (37 C.F.R. 1.9(f) and 1.27(c)-Independent Inventor
☒ 10 Sheets of drawing (3 sets)
☐ An assignment of the invention to:
☒ Other: 2 postcards

CLAIMS AS FILED

Small Entity

Other than a Small Entity

FOR	NO. FILED	NO. EXTRA
Basic Fee		
Total Claims	-20- 10	0
Indep Claims	-3- 2	0
multiple dependent claim present		

RATE	FEE
	\$395
x \$11 =	
x \$41 =	\$
x \$135 =	\$
TOTAL	\$395

RATE	FEE
	\$790
x \$22 =	\$
x \$82 =	\$
x \$270 =	\$
TOTAL	\$

If the difference in Col. 1 is less than zero, enter "0" in Col. 2

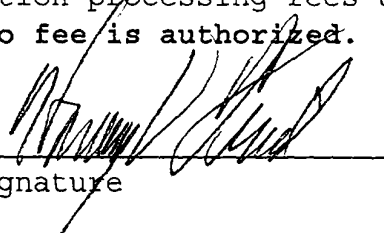
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- ☐ A check in the amount of _____ is enclosed.
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☐ Any additional filing fees required under 37 C.F.R. 1.16.
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☒ No fee enclosed. No fee is authorized.

Date

May 15, 1998

Signature



VENTILATING FOUNDATION FLOOD GATE

Cross Reference to Related Application

This is a continuation of provisional application number 60/052,819 filed July 10, 1997.

Background of the Invention

1. Field of the Invention

This invention relates generally to crawl space and basement venting, and in particular, to the flood venting of enclosed spaces within a foundation.

2. Description of Related Art

Building Officials and Code Administrators (BOCA) regulations mandate that buildings with subgrade level, enclosed spaces, such as crawl spaces and basements, located in low-lying coastal flood areas, provide for adequate relief from tidal flood waters stemming from oncoming tides and receding waters. As a solution to the problem of tidal flood waters, local regulations and good construction practice employ the use of venting which, while allowing for tidal waters to ebb and flow through the enclosed space, the venting does not allow access to small animals, insects, and other pests through the openings in the enclosed space. In particular, BOCA regulations require flood venting for all new construction in low lying coastal flood areas. Furthermore, BOCA regulations require the use of flood venting where renovations to an existing structure exceed fifty percent of the value of the property.

VIA EXPRESS MAIL LABEL NO. EH594102574US

Notwithstanding, good construction practice also embraces the use of vents which can be opened during warmer months to allow for air ventilation to permit moisture to escape from crawl spaces, while retaining the ability to close during colder months to prevent the circulation of cold air around exposed plumbing in crawl spaces. Thus, because the use of screening and louvers is necessary to achieve both the warm weather and cold weather requirements of proper venting, a flood vent must be able to automatically remove the louver and screen barrier when confronted with free flowing tidal flood water.

Generally, there have been developed a wide variety of devices which may be utilized to provide pressure relief from both liquid and gaseous forces. With respect to gas pressure relief devices, U.S. Patent No. 3,680,239, issued Aug. 1, 1972 to Burtis for PRESSURE EQUALIZING VALVE, disclosed a device to relieve overpressure and underpressure in the opening and closing of a door of a refrigerated space. U.S. Patent No. 2,774,116, issued Dec. 18, 1956 to Wolverton for DOUBLE ACTING RELIEF VALVE, U.S. Patent No. 2,798,422, issued Jul. 9, 1957 to Bourque for AIR RELIEF MEANS FOR DOORS, and U.S. Patent No. 3,123,867, issued Mar. 10, 1964 to Combs for VESTIBULE PRESSURE EQUALIZER related to the equalization of differential air pressure experienced in the swinging of one door relative to another door. Finally, U.S. Patent No. 2,105,735, issued Jan. 18, 1938 to Hodge for PRESSURE RELEASING APPARATUS, and U.S. Patent No. 4,116,213, issued Sep. 26, 1978 to Kamezaki for AIR PRESSURE CONTROL APPARATUS FOR A HOT OR COLD STORAGE CHAMBER, taught methods to release pressure in

closed chambers resulting from changing temperatures within the chamber. In particular, the Kamezaki apparatus utilized a swinging damper hinged at the top of an enclosing frame. Nevertheless, neither the Kamezaki apparatus nor other inventions contemplated the use of a vented damper able to relieve pressure resulting from fluid flow.

Correspondingly, several devices have been developed which provide relief from overpressure resulting from the flow of water and other liquids. U.S. Patent 4,349, 296, issued Sep. 14, 1982 to Langeman for IRRIGATION DITCH GATE described a gate for an irrigation ditch, which during normal conditions, through the use of tensioned springs, maintained flood gates in a closed position, but upon flood conditions, allowed for the gates to open. U.S. Patent 3,939,863, issued Feb. 24, 1976 to Robison for BASEMENT SUMP CONSTRUCTION disclosed a basement drain containing a trap for the prevention of back flow of flood water. U.S. Patent 4,174,913, issued Nov. 20, 1979 to Schliesser for ANIMAL GUARD FOR FIELD PIPE related to an invention which, while allowing for the free-flow exit of debris carrying effluents from an open pipe end, prevented animal entry into the pipe. Still, none of the aforementioned devices contemplated the integration of a liquid flow control device with a temperature controlled ventilation system.

Presently, several patents disclose methods for ventilating enclosed foundation spaces. U.S. Patent 5,293,920, issued Mar. 15 1994 to Vagedes for LOUVERED BASEMENT VENT, and U.S. Patent 5,487,701, issued Jan. 30 1996 to Schedegger et al. for PLASTIC

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Summary of the Invention

5 The subject invention has advantages over all current air vents now used and provides a novel and nonobvious opening for the entry and exit of tidal flood waters. The maintenance free flood vent can be installed in new and existing crawl spaces and foundations and can remain in use year round. These vents have particular utility in areas designated by the Federal Emergency Management Agency (FEMA) as low lying, flood areas. When installed, the vent will allow for the free passage of air ventilation in warm temperatures and the temperature controlled louvers will close fully in colder temperatures.

10 Also, the louvered panel will be screened to prevent penetration by small animals, insects, and other pests and will operate like a pivotally connected gate. The panel can be secured in the closed position through the use of collapsible catches which enable the panel to snap open in either direction depending on the direction of the current of the flood water. The amount of pressure required to open the flood vent is determined by coastal construction regulations, FEMA, and good construction practices and is typically 20 to 25 lbs. as measured when the vents are in the closed position.

15 A vent in accordance with an inventive arrangement can remain open for regular air ventilation in warm weather conditions, can close to block off air flow during cold weather conditions and can, at any time, snap open to enable the passage of flood water into and out of the crawl space.

25 A flood gate for use in a foundation crawl space and the

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like comprises a frame having side walls defining a fluid passageway therethrough, a door pivotally mounted in the frame for bidirectional rotation between two open positions and a closed position therebetween to permit tidal water flow therethrough, and at least one catching assembly, also referred to as a latching mechanism, for holding the door in the closed position against a minimum level of pressure of the tidal water flow, whereby tidal flood waters exceeding the minimum pressure level are automatically vented through the crawl space and the like reducing a risk of structural damage from the tidal flood waters. A flood gate advantageously comprises a door having a ventilation opening, an automatic louver assembly for controlling air flow through the opening, and a screen covering the opening. An automatic louver assembly opens and closes responsive to ambient temperature.

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A method for integrating ventilation of an enclosed space and relief from tidal flooding of an enclosed space comprises the steps of: maintaining a vent door in a closed position absent tidal flooding, automatically opening and closing vents in the vent door in response to changes in ambient temperature and opening the vent door in response to sufficient pressure exerted by flood waters during tidal flooding. The automatic adjusting of vents comprises the steps of: automatically sensing ambient temperature, automatically opening the vents in response to warmer ambient temperatures, and automatically closing the vents in response to cooler ambient temperatures. The method can further comprise: automatically biasing the vent door to the

closed position, releasably latching the vent door in the closed position, and allowing the vent door to swing open in the direction of the tidal flow.

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Brief Description of the Drawings

Presently preferred and alternative embodiments of the inventive arrangements are shown in the drawings, it being understood, however, the inventive arrangements are not limited to the precise arrangements and instrumentalities shown.

Figure 1 is a cross section taken along the line A-A of Figure 2.

Figure 2 is a front elevation of the alternative embodiment of the invention.

Figure 3 is a right side elevation of the catching assembly mechanism detail shown in Figure 1.

Figure 4 is a right side elevation of the rod connection detail shown in Figure 1.

Figure 5 is a cross section taken along the line C-C of Figure 2.

Figure 6 is a cross section taken along the line A-A of Figure 7.

Figure 7 is a front elevation of the preferred embodiment of the invention.

Figure 8 is an isometric elevation of the front panel and frame connection detail shown in Figure 7.

Figure 9 is a cross section cut through the midpoint of the isometric elevation of the front panel shown in Figure 8.

Figure 10 is a detail section cut through the latching mechanism.

Detailed Description of the Preferred Embodiments

Figure 6 illustrates the flood vent 108 according to the preferred embodiment of an inventive arrangement. In the presently preferred embodiment, the flood vent 108 has an outer frame 110 formed with polypropylene. The dimensions of the outer frame 110 may vary from that of an 8" X 16" concrete masonry unit (CMU) to 16" X 16", that of two CMUs. Also in the presently preferred embodiment, the top rail 112 and the bottom rail 114 each are 16 3/8" long, and the side rails 116 are 8 3/8" long.

The outer frame 110 can be secured to a wall opening using stainless set screws as an example. Divots can be drilled in the masonry prior to setting screws to ensure proper security. The perimeter can be caulked as required.

Figure 7 illustrates the components of the door 122 made with a lightweight, corrosion-resistant material such as molded polypropylene. The door 122 comprises a honeycomb-patterned mesh grille 124 backed by screening 130, for example made from stainless steel. A pair of opposing pull tabs 132 are attached to the mesh grille 124.

Figure 8 illustrates an isometric view of the front side elevation. The outer frame 110 houses the door panel 122. The smaller door panel 122 connects to the outer frame 110 by pivot points 134 which extrude from the top of the door panel 122.

Figure 9 illustrates the equally spaced positioning of the finned, polypropylene louvers 158 within the door frame 128. A vertical rod 160, made from a lightweight, corrosion-resistant, strong material, such as polypropylene, couples the finned

louvers 158 to a temperature sensitive actuating device 136 mounted on a louver 158 at the midsection of the panel door 122. The temperature sensitive actuating device 136, so named because the device translates thermal inputs into physical motion, is
5 adjusted to drive the finned louvers 158 open during warm temperatures and to fully close the louvers when the temperature falls below forty degrees Fahrenheit.

Figure 10 illustrates a detail section cut through the latching mechanism. The latching mechanism comprises of two rods
10 160 and an inner spring 164, inserted into a hollow rod 162 which has been sized to house the rods 160 and spring 164. Both tips of the rods 160 are rounded. The tips extend past the edge of the door panel so as to be received by detent sleeves 166 extruding from both side rails 116.

Figure 1 illustrates an alternative embodiment of a flood
15 vent 8 according to an inventive arrangement. In the alternative embodiment, the flood vent 8 is framed by an outer frame 10 which is formed with 1" thick by 3" wide strips of a lightweight, corrosion-resistant material such as polypropylene. The
20 dimensions of the outer frame 10 are equal to that of an 8" X 16" concrete masonry unit (CMU). Also in the alternative embodiment, the top rail 12 and the bottom rail 14 each are 16 3/8" long, and the side rails 16 are 8 3/8" long. A 1" wide extrusion 18 on the inner surface 20 of the outer frame 10 receives the door 22. The
25 outer frame 10 can be secured to a wall opening using stainless set screws as an example. Divots can be drilled in the masonry prior to setting screws to ensure proper security. The perimeter

can be caulked as required.

Figure 2 illustrates the components of the door 22 made with a lightweight, corrosion-resistant material such as polypropylene. The door 22 comprises a grille pattern 24 defined by a louver panel 26 and a door frame 28 surrounding the louver panel 26. The grille pattern 24 is backed by screening 30, for example, made from aluminum. A pair of opposing pull tabs 32 are attached to the door frame 28.

Figure 3 illustrates a detailed view of the catching assembly 34 and the temperature sensitive actuating device 36. The catching assembly 34 comprises an adjustable screw 38, a catch spring 40, a ball bearing 42 made from stainless steel, and a threaded sleeve 44. The adjustable screw 38 is threaded through the top surface 46 of the lower door frame 48 into a cavity 50 in the lower door frame 48. The cavity 50 holds the catch spring 40 and the ball bearing 42. An opening 52 with a diameter less than the diameter of the ball bearing 42 is between the cavity 50 and the lower surface 54 of the lower door frame 48. The sleeve 44 is threaded into the extrusion 18 on the bottom rail 14. The adjustable screw 38 varies the compression of the catch spring 40, and the catch spring 40 pushes the ball bearing 42 partially through the opening 52. The sleeve 44 accepts the portion of the ball bearing 42 that extends through the opening 52.

Multiple horizontal rods 56 made from aluminum extend through the door 22 and are attached to the door frame 28. The horizontal rods 56 are equally spaced within the door frame 28.

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Finned louvers 58 are attached to all of the horizontal rods 56. A vertical rod 60, made from a lightweight and strong material such as aluminum, attaches the finned louvers 58 to a temperature sensitive actuating device 36, so named because the device translates thermal inputs into physical motion. The temperature sensitive actuating device 36 is mounted on the bottom-most horizontal rod 56, and is adjusted to drive the finned louvers 58 open during warm temperatures and to fully close the louvers when the temperature falls below forty degrees Fahrenheit.

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Figure 5 illustrates a detailed view of the hinging apparatus. A spring-loaded piano hinge 62, for example made from stainless steel for corrosion resistance, rotatably connects the door frame 28 to the extrusion 18 on the top rail 12. The spring loaded piano hinge 62 can rotate up to 90 degrees in both directions. When no horizontal pressure is exerted on the door 22 the spring-loaded piano hinge 62 urges the door 22 back to a substantially vertical position. As the door 22 is urged to a substantially vertical position, the spring-loaded piano hinge 62 must have sufficient force to compress the catch spring 40 which allows the ball bearing 42 to withdraw into the opening 52 such that the ball bearing 42 can pass over the sleeve 44. The spring load is sensitive to 6 to 8 lb. of horizontal force. A front and back flexible weather strip 64 are preferably attached to the extrusion 18 adjacent the spring-loaded piano hinge 62 and to the door frame 28.

What is claimed is:

1. A flood gate for use in a foundation crawl space and the like, the flood gate comprising:

a frame having side walls defining a fluid passageway therethrough;

a door pivotally mounted in said frame for bidirectional rotation between two open positions and a closed position therebetween to permit tidal water flow therethrough; and,

at least one catching assembly for holding the door in said closed position against a minimum level of pressure of said tidal water flow;

whereby tidal flood waters exceeding said minimum pressure level are automatically vented through said crawl space and the like reducing a risk of structural damage from said tidal flood waters.

2. A flood gate according to claim 1, wherein said flood gate comprises:

said door having a ventilation opening;

an automatic louver assembly for controlling air flow

through said opening; and,

a screen covering said opening.

3. A flood gate according to claim 2 wherein said automatic louver assembly opens and closes responsive to ambient temperature.

4. A flood gate according to claim 2, wherein said louver assembly comprises:

a plurality of louvers;

a temperature sensitive actuating device; and,

5 a member connecting said plurality of louvers to said temperature sensitive actuating device;

5. A flood gate according to claim 1, wherein said catching assembly comprises:

at least one catch;

10 at least one resilient member; and,

at least one detent sleeve;

whereby the catching assembly can maintain said door in said closed position until said minimum pressure is applied to cause the door to swing into one of said open positions.

15 6. A flood gate according to claim 1, wherein said screen comprises:

a mesh grille; and,

a screen over said grille;

20 whereby small animals, insects and other pests are denied access to said crawl space and the like notwithstanding ventilation of said crawl space and the like.

7. A method for integrating ventilation of an enclosed space and relief from tidal flooding of said enclosed space, comprising the steps of:

maintaining a vent door in a closed position absent said
5 tidal flooding;

automatically opening and closing vents in said vent door in response to changes in ambient temperature; and,

opening said vent door in response to sufficient pressure exerted by flood waters during said tidal flooding.

10 8. A method as recited in claim 7, wherein said automatic adjusting of vents comprises the steps of:

automatically sensing said ambient temperature;

automatically opening said vents in response to warmer ambient temperatures; and,

15 automatically closing said vents in response to cooler ambient temperatures.

9. A method as recited in claim 7, comprising the steps of:
automatically biasing said vent door to said closed
position; and,

20 releasably latching said vent door in said closed position.

10. A method as recited in claim 7, comprising the steps of allowing said vent door to swing open in the direction of said utidal flow.

Abstract

A flood gate for use in a foundation crawl space and the like comprises a frame having side walls defining a fluid passageway therethrough, a door pivotally mounted in the frame for bidirectional rotation between two open positions and a closed position therebetween to permit tidal water flow therethrough, and at least one catching assembly for holding the door in the closed position against a minimum level of pressure of the tidal water flow. Tidal flood waters exceeding the minimum pressure level are automatically vented through the crawl space and the like reducing a risk of structural damage from the tidal flood waters. The flood gate can further comprise a door having a ventilation opening, an automatic louver assembly for controlling air flow through the opening, and a screen covering the opening. The automatic louver assembly opens and closes responsive to ambient temperature.

FIG. #1

SECTION

FLOOD VENT

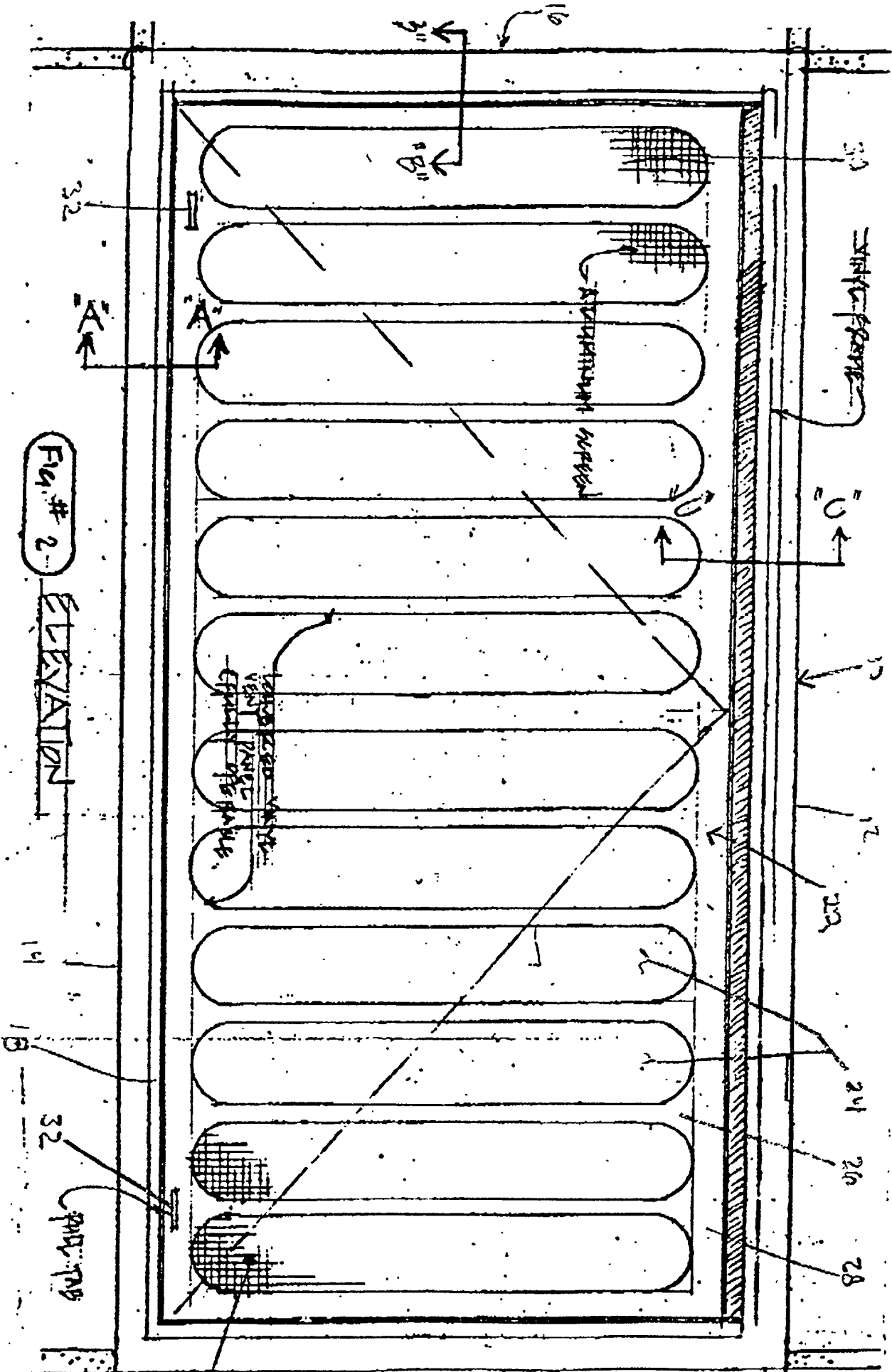
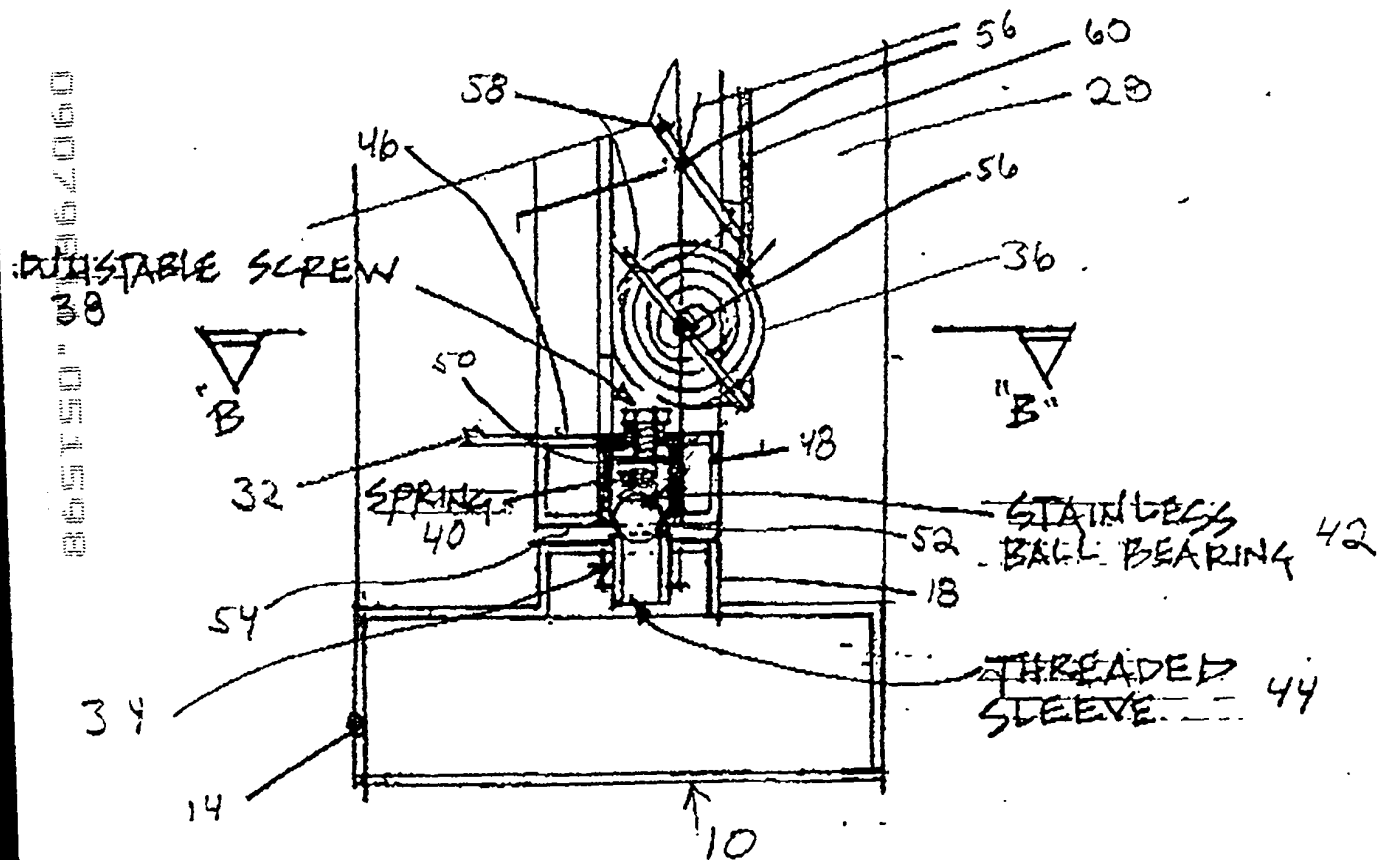


FIG. # 2 ELEVATION

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865750" 38



(FIG 3) DETAIL "A"

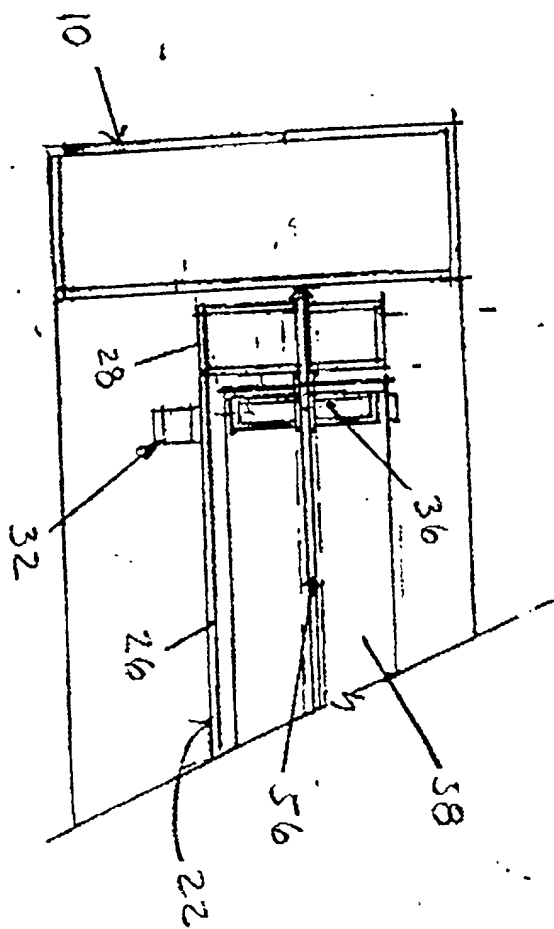
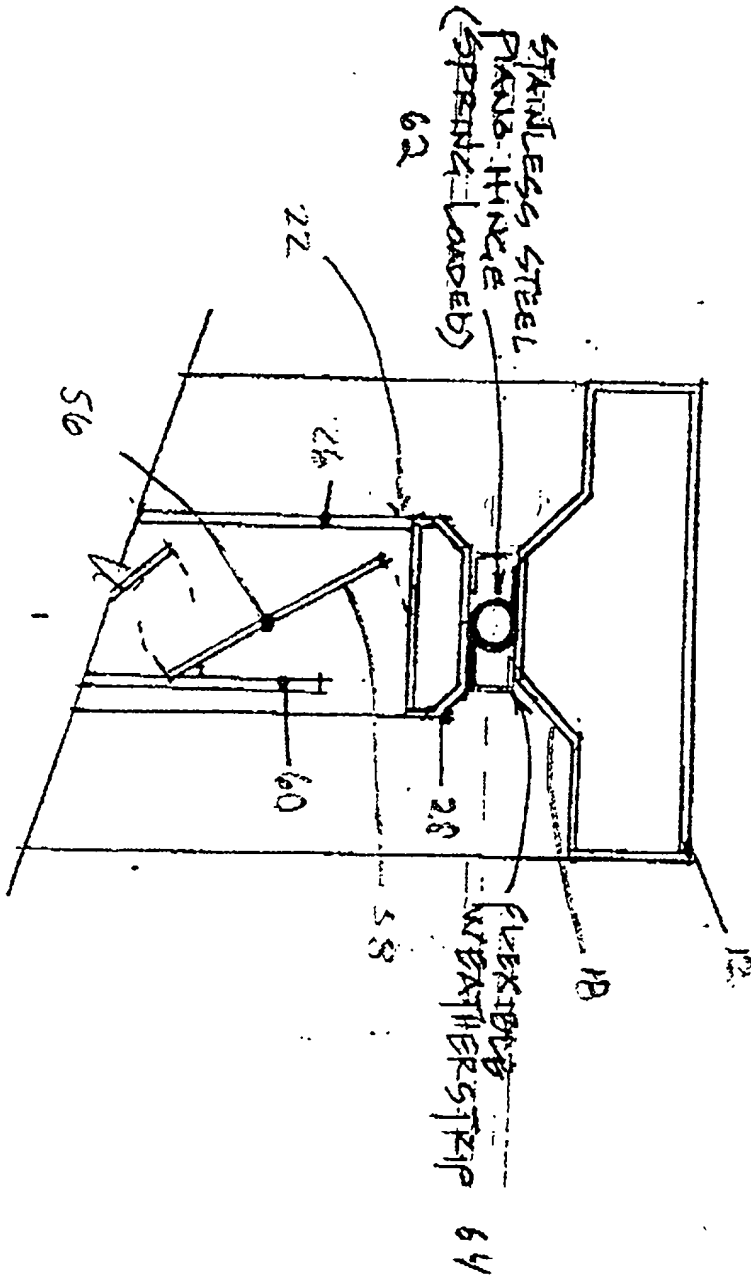


Fig. 4
DETAIL "B"

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(E14#5) DETAIL "C"

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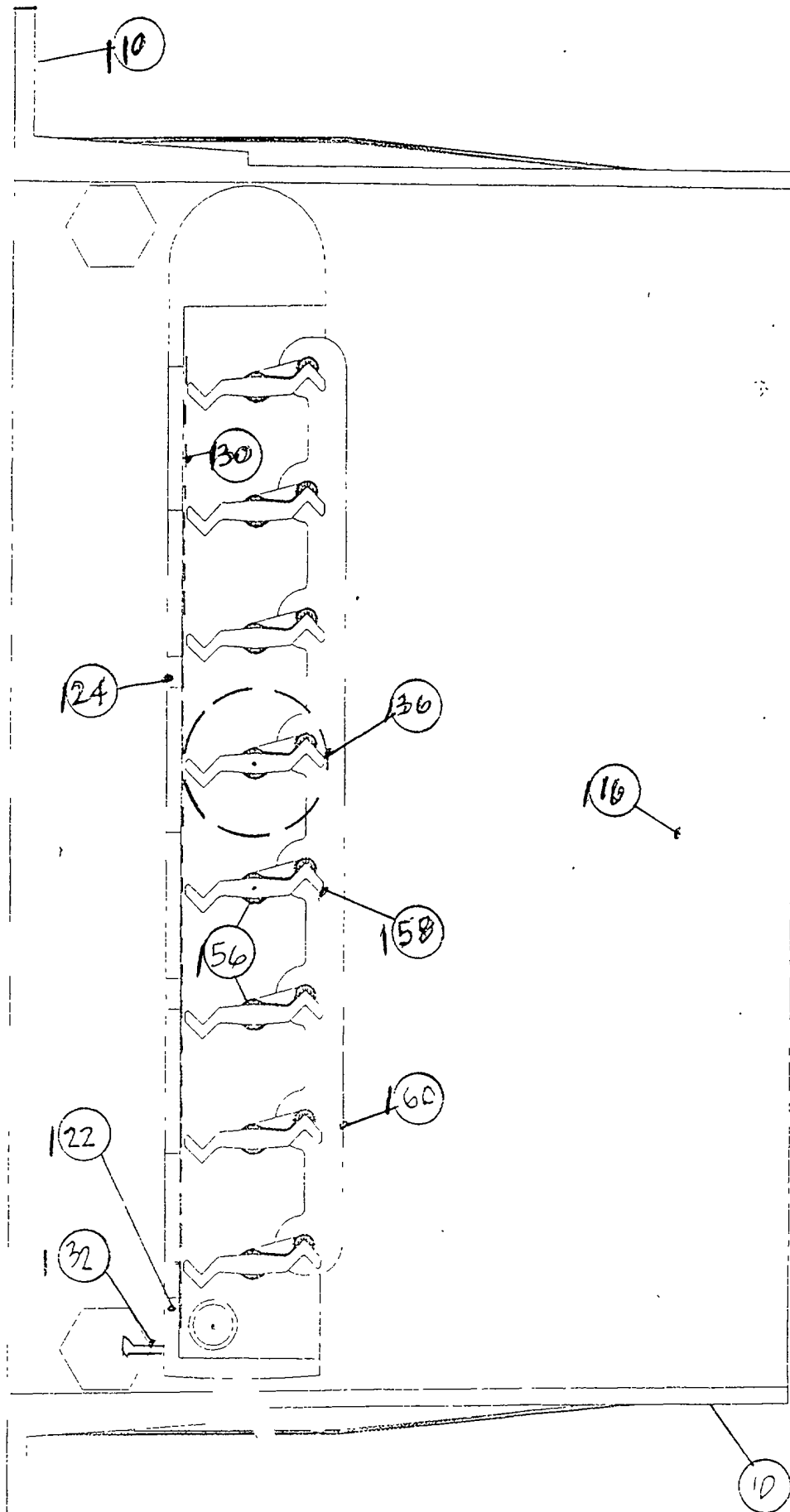
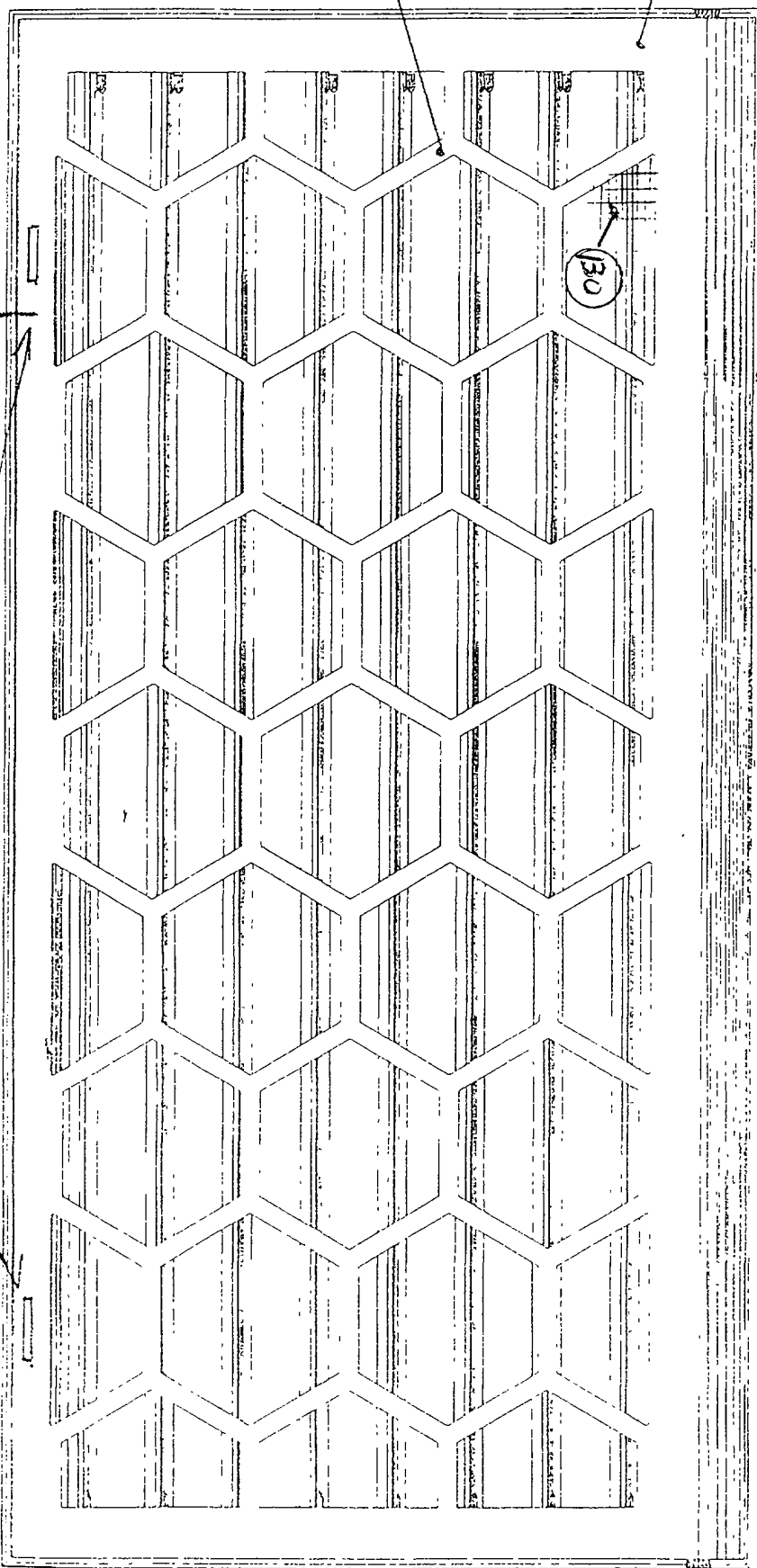


FIGURE N° 6

FIGURE No 147



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A

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FIGURE NO 8

11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000 1001 1002 1003 1004 1005 1006 1007 1008 1009 1010 1011 1012 1013 1014 1015 1016 1017 1018 1019 1020 1021 1022 1023 1024 1025 1026 1027 1028 1029 1030 1031 1032 1033 1034 1035 1036 1037 1038 1039 1040 1041 1042 1043 1044 10

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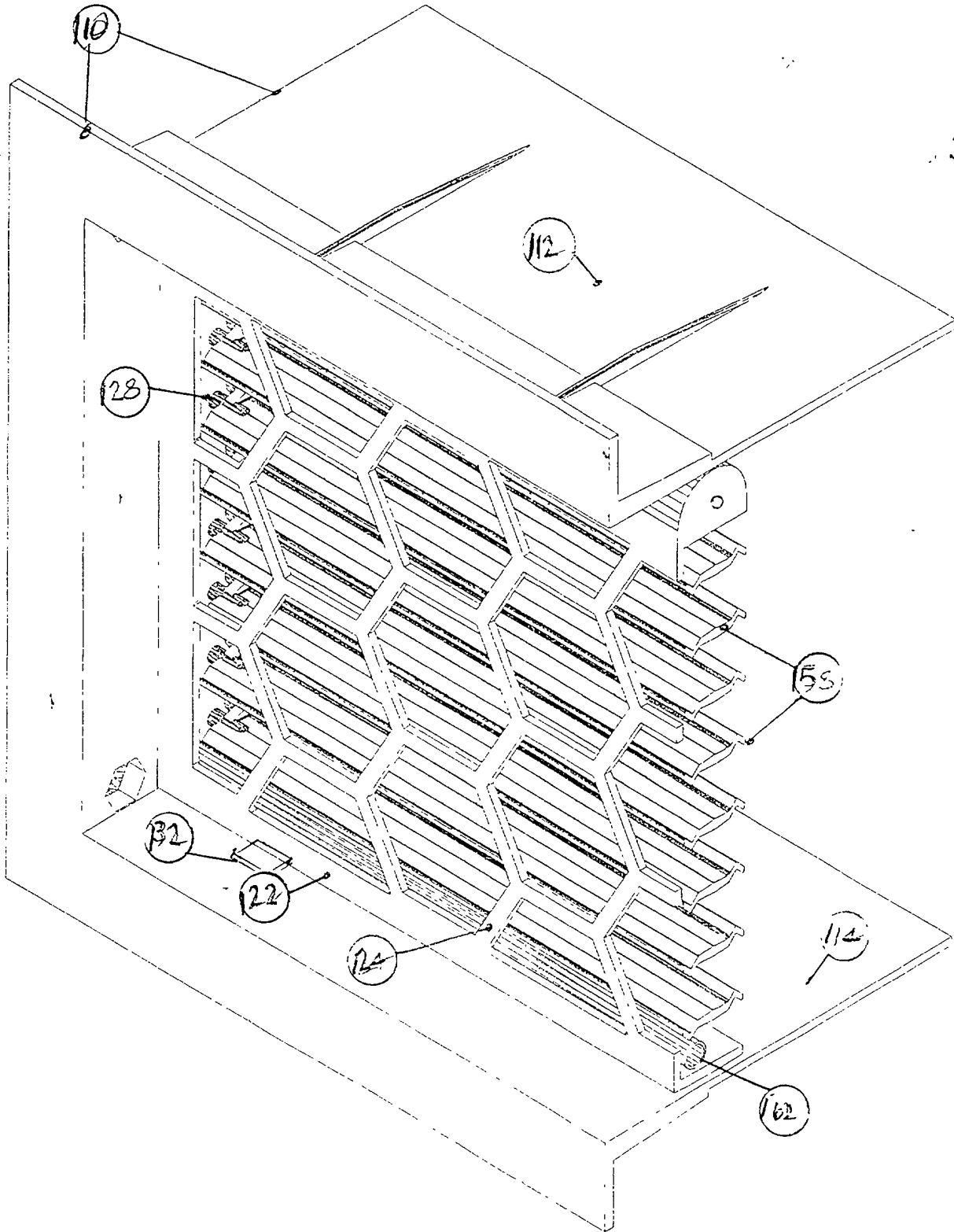


FIGURE NO 9

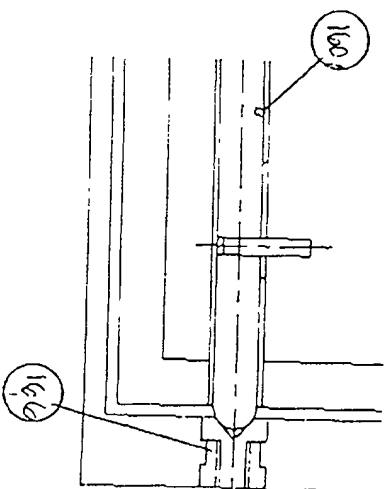
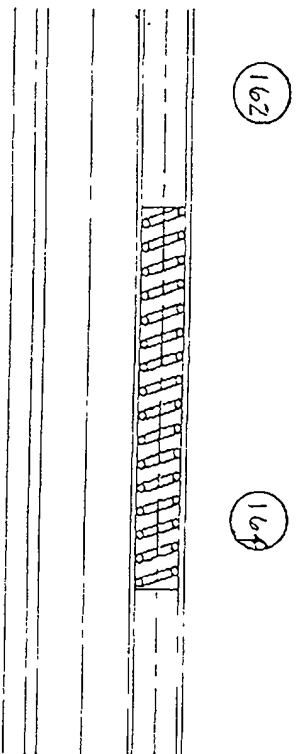
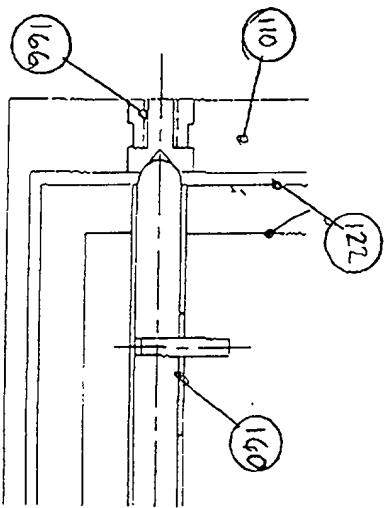


FIGURE No 10

DECLARATION FOR PATENT APPLICATION

Docket: 6371-1

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

VENTILATING FOUNDATION FLOOD GATE

the specification of which (check one)

X is attached hereto.
_____ was filed on _____ as
Application Serial No. _____ and
was amended on _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations Section 1.56(a).

I hereby claim foreign priority benefits and U.S. provisional application benefits under Title 35, United States Code 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign or Provisional Application(s)			Priority Claimed
<u>60/052,819</u>	<u>USA</u>	<u>10 July 1997</u>	<u>Yes</u> <u>No</u>
(Number)	(Country)	(Day/Month/Year Filed)	
_____	_____	_____	Yes No
(Number)	(Country)	(Day/Month/Year Filed)	
_____	_____	_____	Yes No
(Number)	(Country)	(Day/Month/Year Filed)	

I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, Section 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, Section 1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

09079641-051596

(Appln. Serial No.) (Filing Date) (Status-patent, pending, abandoned)

(Appln. Serial No.) (Filing Date) (Status-patent, pending, abandoned)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

I hereby appoint J. Rodman Steele, Jr., Registration No. 25,931; Gregory A. Nelson, Registration No. 30,577; Harvey D. Fried, Registration No. 28,298; Joseph W. Bain, Registration No. 34,290; Robert J. Sacco, Registration No. 35,667; and Ted W. Whitlock, Registration No. 36,965, as my attorneys with full power of substitution and revocation to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith, to amend the specification, to appeal in case of rejection, as they may deem advisable, to receive the patent when granted and generally to do all matters and things needful in the premises as fully and to all intents and purposes as I could do.

Please direct all correspondence to: Harvey D. Fried

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